

CLAIMS

1. A diamond-coated silicon comprising a silicon substrate having a thickness of 500 μm or less coated at least partially with electrically conductive diamond, wherein the silicon substrate is manufactured by the plate-like crystal growth process.
2. The diamond-coated silicon according to claim 1, wherein the plate-like crystal growth process is at least one selected from the EFG process, the string ribbon process and the dendritic web process.
3. The diamond-coated silicon according to claim 1 or 2, wherein the silicon substrate is single crystalline, polycrystalline or amorphous.
4. The diamond-coated silicon according to any one of claims 1 to 3, wherein the silicon substrate is coated with electrically conductive diamond by the chemical vapor deposition process.
5. A manufacturing method of a diamond-coated silicon comprising coating a silicon substrate having a thickness of 500 μm or less at least partially with electrically conductive diamond by the chemical vapor deposition process.
6. A manufacturing method of a diamond-coated silicon comprising;
 - (a) a step for manufacturing a silicon substrate having

a thickness of 500 μm or less by the plate-like crystal growth process; and

(e) a step for coating the manufactured silicon substrate at least partially with electrically conductive diamond by chemical vapor deposition process.

7. The manufacturing method of a diamond-coated silicon according to claim 6, wherein the plate-like crystal growth process is at least one selected from the EFG process, the string ribbon process and the dendritic web process.

8. The manufacturing method of a diamond-coated silicon according to claim 6 or 7, wherein the step (a) and the step (e) are successively carried out.

9. The manufacturing method of a diamond-coated silicon according to any one of claims 6 to 8, further comprising, between the step (a) and the step (e),

(d) a step for controlling a pressure at least once.

10. The manufacturing method of a diamond-coated silicon according to any one of claims 6 to 9, further comprising, after the step (e),

(f) a step for controlling a pressure at least once.

11. The manufacturing method of a diamond-coated silicon according to any one of claims 6, 7, 9 and 10, further comprising, between the step (a) and the step (e), or between the step (d) and the step (e) when present,

(b) a step for winding the silicon substrate; and

(c) a step for supplying the wound silicon substrate to a chemical vapor deposition device.

12. The manufacturing method of a diamond-coated silicon according to any one of claims 6 to 11, further comprising, after the step (e), or after the step (f) when present,

(g) a step for winding a diamond-coated silicon.